

The Logical Form and the Ambiguities of Natural Language: The Critics from Postal

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Abstract. The essay discusses which type of ambiguities is better to be eliminated by using the logical perfect language in logical form, discusses the range of the p-complement problem that mind-possessing entity could solve, by analyzing Hasegawa's examples and Postal's criticizes, the lexical and syntactic ambiguities, and makes a comparison of the meaning and properties of "entity" between linguistics and metaphysics.

Keywords: Logic Structure; Ambiguity; Entity.

1. Introduction

The question that how ambiguities could be eliminated as much as possible by changing the surface structure has been long treated as a core puzzle of linguistics and semantics. The examples of Hasegawa to discuss the meaning of entity in linguistics, compared with metaphysics would be a possible choice to put the question a well-examined answer. By analyzing the meanings of the sentences, two types of logic are revealed, that is surface structure and deep structure. The first one is made up of grammar structure and syntax, and the second one represents the real logic and meaning of the natural language. A general point of view suggests, when people use natural languages to communicate, in the process of understanding the true meaning of the sentences, people do not analyze the information in the surface structure, but in the deep structure. The inter-conversion of them happens frequently and which is a complex process, people first translate the surface structure of the natural language into the deep structure, from its grammar form to logical form, and through the context and the syntax infer the deep logic from it.

This research is going to discuss how logical form can improve the logical relations of the natural language, which types of ambiguity can be eliminated in a logically perfect language, and trying to find out the reasons why some kinds of ambiguities are less possible to be decreased, by discussing the sample sentences given by Hasegawa and Postal. First of all, the first part of the research discussed the two major types of ambiguities, which are structural ambiguity and lexical ambiguity, by using two sentences as examples. Lexical ambiguities are less possible to be eliminated by changing the expression from surface structures to logical forms, since it is easier to tell the different semantics by learning the background of a description, instead of giving distinct names to distinct objects. It is reasonable to infer that compared with lexical ambiguities, structural ambiguities are easier to be eliminated, since the amount of work to deal with lexical ambiguities might be big, and it could be annoying and inefficient. Structural ambiguities are better to be eliminated in a logically perfect language, expressed in logical form or by other methods, which may be more effective since its extended use.

After all, the research paper discusses the meaning and properties of the word, entity, and compares the conception in linguistics with the same word in metaphysics, to find out the three differences between the meaning of the same word. Firstly, from the different results of the two subjects when a new entity is conceived. Secondly, from the contrasting way they solve corresponding problems in linguistics and metaphysics. Lastly, the paper discussed the properties of the entities themselves, and the different attitudes of linguistics and philosophers when using the entities.

2. An example of natural language

Natural language is the carrier of thoughts and expressions, people use them to exchange information. Of the origin of the languages, it is easy to imagine, that from long before, nouns and verbs are invented to represent the actual objects which physically exist. After that, ancient humans use natural languages to communicate the location of their prey, just like bees use their dance to show the direction of flowers. When the words of directions are created, we homo sapiens started to name the invisible and abstract concepts. As more and more vocabularies are created, as people created more complicated sentence structures and express more complicated logical relationship, a big number of ambiguities appears in the descriptions. To eliminate the ambiguities, and to communicate the concepts and logical relations more clearly, it is necessary to rewrite a natural language from the surface structure into logical form, when an expression is difficult to be understood.

This research is going to argue that structural ambiguities are better to be eliminated in logically perfect language or expressed in the logical form [1]. Lexical ambiguities are less possible to be eliminated by changing the expression from surface structures to logical forms, since it is easier to tell the different semantics by learning the background of a description, instead of giving distinct names to distinct objects.

First of all, ambiguities are mainly classified into two types, which are named as structural and lexical. Structural ambiguity is the misleading created by syntactic structure and influences the semantics. Lexical ambiguity is mainly produced by vocabulary and influences semantics as well. The two examples shown below are different kinds of ambiguity respectively [2].

John believes that Mary didn't kiss the boy she kissed.

Little Red Riding Hood's home is in the west.

The sentence (1) is the instance given by Hasegawa. The description indicates two different meanings. The first one is that the truth is Mary kissed the boy, however, John believes she did not, it is because he did not know the facts. Nevertheless, the sentence can also be explained as, John knows the event "Mary kissed the boy", but thinks this cognition is a misunderstanding of the scene and believes the conclusion is a fault. Therefore, if the background is not given, the same sentence can be written into two different expressions of logical form, which have a contrary premise (John knows Mary seemed to kiss the boy, or John does not know). This can be classified as structural ambiguity.

Sentence (2) can both be a structural ambiguity and a lexical ambiguity. It is obvious that this sentence is lack the original point, so the meaning of "west" is ambiguous. In this case, the location of Little Red Riding Hood (LRRH)'s home can be explained as at the narrator's west, either can be at the west of the whole district. If the narrator stands in the very east region of the area, and LRRH's home is in the central region of the district, this description is still valid for the first explanation but is invalid for the second one. This is structural ambiguity. If LRRH is a very common name in the district she lives, and there is another girl named LRRH, and their home is at a different place, sentence (2) is ambiguous as well because the two-person are denoted by the same name LRRH.

The cause of the ambiguities of the first sentence is that it mixed the two types of logic into one syntax, that if they can be expressed separately, the ambiguity will then disappear. Hasegawa implies that it is not necessary to design two completely different underlying structures for the meanings, but to set up interpretive rules, acting on deep structure, which assigns to each S an "assertor", where "the 'assertor' of an S refers to the person who is responsible for the statement (proposition)S, the person whose judgment the proposition S represents" [3]. Similarly, the ambiguity of direction and abstract description of time and space can be eliminated by setting a reference frame. Therefore, "Structural ambiguity is ruled out because every sentence has a unique syntactic structure, which reflects a unique semantic structure" [4].

Nevertheless, the writer would like to argue that, the lexical ambiguities are less possible to be eliminated by giving distinct names to distinct objects and concepts, since the vocabularies are like the coordinates on a spectrum, and the number of points on a spectrum is infinity, that it is impossible

to give them all distinct name, so in this case, it is more effective to understand the semantics by learning the background of a sentence, rather than recite the distinct words.

To be concluded, this first part of the research discussed the two major types of ambiguities, which are structural ambiguity and lexical ambiguity, by using two sentences as examples. Lexical ambiguities are less possible to be eliminated by changing the expression from surface structures to logical forms, since it is easier to tell the different semantics by learning the background of a description, instead of giving distinct names to distinct objects. It is reasonable to infer that compared with lexical ambiguities, structural ambiguities are easier to be eliminated, since the amount of work to deal with lexical ambiguities might be big, and it could be annoying and inefficient. Structural ambiguities are better to be eliminated in a logically perfect language, expressed in logical form or by other methods, which may be more effective since its extended use.

3. NP Entity

By analyzing the meanings of the sentences, two types of logic are revealed, that is surface structure and deep structure. The first one is made up of grammar structure and syntax, and the second one represents the real logic and meaning of the natural language. A general point of view suggests, when people use natural languages to communicate, in the process of understanding the true meaning of the sentences, we do not analyze the information in the surface structure, but in the deep structure. The interconversion of them happens frequently and which is a complex process, people first translate the surface structure of the natural language into the deep structure, from its grammar form to logical form, and through the context and the syntax infer the deep logic from it.

Due to the conclusion of the preface, this part is going to discuss the methods that could eliminate the structural ambiguities, and try to find out if the ambiguities could be completely removed, or if the method is only able to deal with sentences with certain contexts. Hasegawa's arguments in transformations and semantic interpretation would be contained as examples being analyzed.

When facing the sentences like (1), Hasegawa raised an argument, that adequate English grammar could be improved to set rules to eliminate ambiguities. The contradictory reading of "John knows that Mary kissed the boy is the fact and not regard it as a fact", Hasegawa suggests, is caused by the uncertainty of the hiding assertor, which could be described as the narrator who makes the assertion. The factor that would lead to the difference between the contradictory reading and the consistent reading, is the assertor of the different parts of the statement. If the narrator could be formulated that, when the verbs indicating propositional attitude appear, the sentence should always be divided into plural parts, that the underlying subject NP is John, and the other part of the sentence should be regarded as a judgment given by the speaker, then the contradictory judgments are then meant to be given by different assertors separately, which maintain the consistency of the sentence. The method seems to explicate the ambiguities of this type of sentence, however, it cannot be widely applicable, even in sentences including propositional verbs. However, does the solution deal with the contradiction effectively, or it can only help to maintain consistency under several certain conditions?

The propositional verbs (such as belief, think, claim, etc.) are named p-complement by Postal, who gave criticism to Hasegawa's arguments and found several issues with his solution. Firstly, he changed the subject from the third person to the first person. At this stage, the sentence remains consistent, since the assertions are still made by different assertors. Secondly, Postal changed the tense from the simple present to simple past:

I believed that Mary hadn't kissed the boy she kissed [5].

In this case, the sentence has two ambiguities very similar to the ambiguities that sentence (1) has, since the assertors of different complements become the same one, it becomes impossible to separate the statements into two parts, and divide the assertions into distinct judgments. The solution lost its function when the tense changes,

What is more, Postal suggests, when the NP is not a person but an object which is not able to make judgments, the sentence can still involve the verbs similar to the p-complements (such as: indicates,

prevent, keep...from..., etc.), the theory of assertor cannot prevent the sentence from being ambiguous at all, since there is only one possible assertor through the whole sentence.

4. Entity

In the second part, it mentioned that the linguist Hasegawa created a mind which acts as the assertor, to divide a sentence into separated assertions, and therefore can solve the problem of p-complement ambiguities. This extra assertor could be described as the “mind-possessing entity”. In the area of metaphysics, the entity is a conception that has been discussed long before, people suggested it as the basic component of the world. In both areas, entities are designed to be a part of the analysis and have the function of clarifying conceptions and eliminating confusion while cognitions have been made. This part is going to discuss the meaning of "entity" in linguistics, and the differences between the word between linguistics and metaphysics.

A lot of ancient philosophers have had given the question of the definition of entities, that they aimed to find out a method that could separate the components of an object, that they believe most of the objects are made up of multiple elements, from the materials to states, and by finding out the entities, they could get a better understanding of the essence of the world. Aristotle claims, "for there must be some entity-either one or more than one from which all other things come to be, it being conserved" [6]. Even though philosophers suggest different things as the entity, this conception is always regarded as the essence of the objects that physically exist, that the conception is related to the substances and materials, or fixed forms. Therefore, they have the properties of certain, eternal, and unchanged. William of Ockham suggested a very famous slogan, known as Occam's Razor principle: “Do not multiply entities beyond necessity” [7]. Since conceiving a new entity inconsiderately could probably create a definition that is contradictory to the original system, occupies the interpretation that could be made through the original entities, and then leads to ambiguities and confusion in the process of analyzing the essence of an object or a conception. Nevertheless, entities are conceived by linguists to eliminate the contradictory readings, as suggested in Transformations and Semantic Interpretation, “the complement in (i) has a contradictory reading, but also a consistent reading in which the description boy she kissed is used by the speaker but is not part of the belief attributed to the entity designated by John." Therefore, the first difference of entity between linguistics and metaphysics is when an entity is conceived, it could probably lead to contradictions in metaphysics, while it could lead the readers to choose the consistent readings rather than the contradictory one in linguistics.

Aristotle claims that the essence of objects is not changed by the changes of their states and that the ill Socrates and healthy Socrates are made by the same entities [8]. Similarly, Augustine argues that the immovable materials and forms, which are the conserved entities, made up the objects [9]. In metaphysics, they suggest that the perceptual attributes of the objects are the external properties of a conception, they are regarded as the additional states of entities. However, for linguists, entities are raised to solve problems about deep subjects. These reveal the second difference between linguistics and metaphysics, which is that the entity is located at the deepest part of the metaphysical conceptions, and is created to explain the surface world. On the contrary, in the linguistic area, entities are raised to solve the problem of the deeper structure and to eliminate the ambiguities of the semantics of a sentence, rather than analyze its surface structure.

The third difference is the property of the entity itself. In the area of metaphysics, all the entities are asked to have the puerility of modal, that the entities should be separated into clear classifications, that a type of entity is materials (material), and the other type form (forma), showing in metaphysics, the mind-related conception and the materials could not be mixed and discussed in the same problem [10]. However, in linguistics, as mentioned in the first paragraph of this part, the solution given by Hasegawa could be named a "mind-possessing entity", that allows the mind to intervene in the deep structure of a sentence, which could be described as a material conception.

5. Conclusion

In conclusion, the first part of the research discussed the two major types of ambiguities, which are structural ambiguity and lexical ambiguity, by using two sentences as examples. Lexical ambiguities are less possible to be eliminated by changing the expression from surface structures to logical forms, since it is easier to tell the different semantics by learning the background of a description, instead of giving distinct names to distinct objects. It is reasonable to infer that compared with lexical ambiguities, structural ambiguities are easier to be eliminated, since the amount of work to deal with lexical ambiguities might be big, and it could be annoying and inefficient. Structural ambiguities are better to be eliminated in a logically perfect language, expressed in logical form or by other methods, which may be more effective since its extended use. In the second part, the paper discussed the sample sentences given by Hasegawa and Postal and analyzed their opinions and process of inference. The second part suggests that Hasegawa thought the p-complement ambiguities are caused by the uncertainty of the hiding assertor, and the suggestion of the hiding assertor could maintain the consistency of the sentence. By analyzing the critics and the counter-examples given by Postal, it shows the "min-possessing entity" solution can only help to maintain consistency under several certain conditions. In the third part, through the comparisons between "entity" between linguistics and metaphysics, three differences are suggested. Firstly, when an entity is conceived, it probably leads to contradictions in metaphysics, while it could lead the readers to choose consistent readings rather than the contradictory ones in linguistics. Secondly, the entity is located at the deepest part of the metaphysical conceptions and is created to explain the surface world; while entities are raised to solve the problem of the deeper structure and to eliminate the ambiguities of the semantics of a sentence, rather than analyze its surface structure in linguistics. Thirdly, all the metaphysical entities are asked to have the puerility of modal, that the entities should be separated into clear classifications, the mind-related conception and the materials could not be mixed and discussed in the same problem. However, in linguistics, minds are allowed to intervene in the deep structure of the sentence, which could be described as a material conception.

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